WORK PLAN for FY 2005-2006 – v.5 11/2/05

EcoGIS – Developing GIS Tools for Ecosystem Approaches to Fisheries Management

GOAL

Develop a suite of GIS-based tools that will enhance fisheries scientists' and managers' ability to apply ecosystem approaches to management decisions. Using existing datasets and a simple interface, the tools will automate repetitive tasks and enable spatial analysis of large, diverse datasets providing both efficiency and an ecosystem level view of the marine resource.

OBJECTIVES

1. Build a collaborative team from within NOAA's National Ocean Service (NOS), National Marine Fisheries Service (NMFS), Fishery Management Councils, and other organizations.
2. Define the priority needs of fishery managers and scientists as they adopt ecosystem approaches to management.
3. Acquire existing data sets and evaluate existing ecosystem-based tools to guide the development of EcoGIS.
4. Develop a suite of GIS tools and prototype application that will analyze existing datasets and produce an output that will address priority management and science needs.
5. Identify and document data gaps, including metadata, to bring attention to the need for such data sets to be collected and metadata to be developed.
6. Define additional management questions and scientific hypotheses which can be addressed as a blueprint for future development.

RATIONALE

Ecosystem Approaches to Management are adaptive, geographically specified, take account of ecosystem knowledge and uncertainties, consider multiple external influences, and strive to balance diverse societal objectives. With the recognition that traditional single-species Fishery Management Plans do not meet all of these criteria, Ecosystem Approaches to Management are gaining favor among fisheries managers and scientists. The EcoGIS project was launched in September 2004 to develop a custom suite of GIS tools to use with diverse marine datasets that will tackle some of the most pressing issues in fisheries management. It is one of several Ecosystem Pilot Projects funded by Congress in 2004, and being developed by the New England, Mid-Atlantic, South Atlantic, and Gulf of Mexico Fishery Management Councils. These pilots should aid fisheries managers to meet future requirements put forth by the Magnuson-Stevenson Act.

TASKS

Task 1. Workshop Preparation, Implementation, and Summary

Completion Date: September 2004

The *Workshop on GIS Tools Supporting Ecosystem Approaches to Management* (EcoGIS Workshop) was held September 8-10 at the NOAA Coastal Services Center in Charleston, S.C. Forty-eight people attended representing a variety of organizations, including NOAA Fisheries (NMFS); NOAA National Ocean Service (NOS); NOAA National Coastal Data Development Center (NCDDC); the New England, Mid-Atlantic, South Atlantic, and Pacific Fishery Management Councils (FMCs); Duke University, and The Nature Conservancy. The purpose of the workshop was to define the spatial analyses and decision support tools needed by the scientists and managers implementing the four Ecosystem Pilot Projects on the Atlantic Coast and Gulf of Mexico. Through presentations and discussion sessions, the input of all participants was used to define an initial conceptual view of the needs of scientists and managers, and in developing priorities for the EcoGIS project.

Task 1 Products:

- *WORKSHOP SUMMARY - GIS Tools Supporting Ecosystem Approaches to Management*, completed December 2004.

Task 2. Defining User Needs and Functional Requirements

Completion date: June 2005

Form a Steering Committee with representation from NMFS, NOS, and regional Fishery Management Councils. Based on results of Workshop (Task 1) and feedback from Steering Committee, define the functional requirements for development of EcoGIS tools and methods in FY'05. Four priority topic areas identified include:

- Area Characterization
- Fishing Effort Analysis
- Habitat Interactions
- Bycatch Analysis

Task 2 Products:

- *EcoGIS Priority Tools – Functional Requirements* "living document", completed May 2005.

Task 3. Website Development
Completion date: January 2005

Develop, launch, and maintain a website unique to the EcoGIS Project. Website hosted by NOAA/NMFS Office of Science and Technology, providing:
• Background information on EcoGIS Project.
• Project Work Plan.
• Relevant references on Ecosystem Approaches to Fisheries Management.
• Staff and Steering Committee contact information.
• Links to GIS data sources, and related Marine Ecosystem GIS projects.
• Complete proceedings of September 2004 Workshop.
• Downloadable documents, including Workshop Summary and Presentations.
• Gallery of representative map products.
• Frequent update of content as needed.

Task 3 Products:
• Website http://www.st.nmfs.gov/ecogis, publically launched December 2004.

Task 4. Data Compilation
Completion Date: September 2005

A suite of biological, habitat, and fisheries management data will be compiled from existing NOAA/NMFS Northeast and Southeast Fisheries Science Center data and applicable data from other agencies and institutions. Initial plans are to utilize a few test data sets to aid in formulating the prototype EcoGIS. These data sets will be derived in collaboration with NMFS Science Centers and from NOS project personnel gathering data available from other NOAA line offices, as well as from other agencies and academic institutions. Types of data sets collected include but are not limited to:
• Marine habitats - bathymetry, bottom classification, hydrography.
• Fishery-dependent - VTR logbook, observer, VMS tracking, dealer, permit.
• Fishery-independent - trawl and dredge surveys, abundance, life history parameters.
• Managerial - jurisdictional boundaries, EFH and HAPCs, marine managed areas.
• Metadata - FGDC-compliant metadata for all spatial data sets used.

Task 4 Products:
• Complete inventory of data sets, sources, and metadata to be included as appendix in Interim Report, September 2005.

Task 5. Develop Prototype Tools
Completion Date: September 2005

Using spatial data sets collected in Task 3, develop GIS methods and tools to address four priority topic areas identifed by the Workshop and Steering Committee:

1. Area Characterization: Within a selected area, define the physical parameters (e.g. sediment type), and biological parameters (e.g. species abundance), and regulatory framework.
2. Fishing Effort Analysis: Define where, when, and how fisheries operate within a given area/ Assess how fisheries have been impacted as a result of regulatory changes.
3. Habitat Interactions: Define the types and amount of habitats that have been fished using bottom-tending gear.
4. Bycatch Analysis: Define the trends in bycatch among different fisheries, geographic areas, time periods, depth ranges, and habitat types.

Task 5 Products:

- Prototype ArcGIS tools to address four topic areas, September 2005.
- Representative analyses to demonstrate the utility of these tools, September 2005.

Task 6. Develop Interim Project Report
Completion Date: September 2005

Prepare comprehensive Interim Report on the project, including:

- Introduction (Background, Achievements to date, Collaboration)
- Methods (Tool schema, data sets used, VBA code)
- Discussion (Data gaps, issues, needs)
- Way Forward (FY'06 plans and vision, additional topic areas)
- Appendices (sample outputs, metadata, summaries of related documents)

Task 6 Products:

- Interim Report available as hardcopy and PDF, September 2005

Tasks 7, 8, and 9. Extension and Review of Results, Further Development, and Final Report in FY'06 Completion Date: September 2006

Meet with clients (fisheries managers and scientists) to demonstrate capabilities of prototype GIS tools. Improve tools and requisite data sets based on feedback from user community. Develop methods to address additional management questions and scientific hypotheses identified in Task 5. Continue to coordinate development with other Ecosystem Pilot Projects in progress at Regional Fishery Management Councils and NMFS Science Centers. Develop Final Report to distribute to user community.

Task 7, 8, and 9 Products:

- Final Report available as hardcopy and PDF, September 2006
- Refined prototype GIS tools, September 2006

CONTACTS

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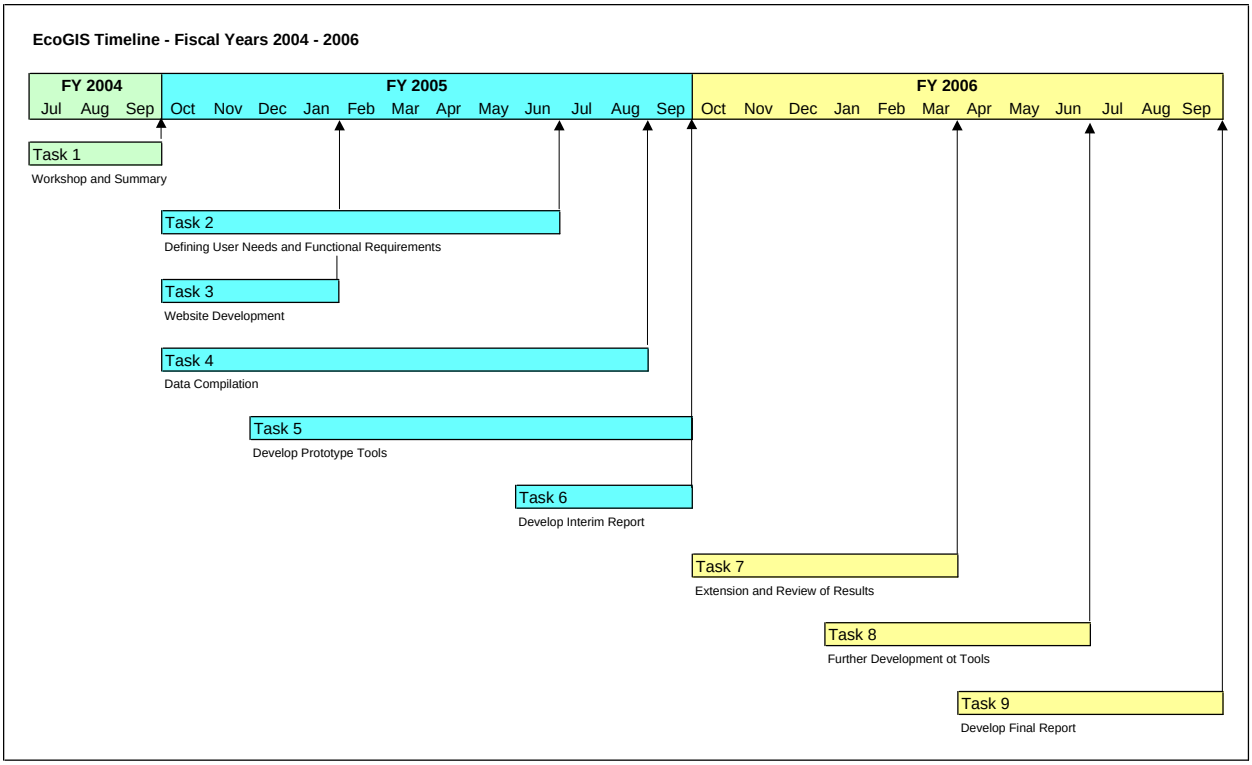
CHRONOLOGY



STAFF ALLOCATION

	Task 1: Workshop and Summary	Task 2: Defining User Needs	Task 3: Website Development	Task 4: Data Compilation	Task 5: Develop Prototype Tools	Task 6: Develop Interim Report	Task 7: Extension of Results	Task 8: Further Development	Task 9: Develop Final Report	Percent of Time
Moe Nelson	X	X		X		X	X		X	80%
Eric Finnen				X	X	X	X	X	X	80%
Tim Haverland (F/ST)	X	X	X				X		X	80%
Ken Buja					X			X		10%
Simon Pittman						X			X	10%
Connie Moy				X						10%